

Appl. No. 10/811,871
Amdt. Dated September 13, 2006
Reply to Office action of March 13, 2006

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REMARKS/ARGUMENTS

This letter is responsive to the Office Action dated March 13, 2006. The due date for a reply within the third month of extension is September 13, 2006. This letter is accompanied by a request for a three-month extension of time (\$510 for a small entity). Accordingly, the applicant respectfully requests that this letter be considered timely filed.

The applicant faxed a Revocation of Agent form on September 7, appointing the firm of Herman & Millman as the agent representing the applicant on this matter.

In the Office Action, the Examiner issued a restriction requirement requiring the applicant to elect claims from one of three groups. As per the telephone discussion between the applicant and the Examiner on November 16, 2005, the applicant elects Group 2, namely claims 12-25 and 33-39. Accordingly, the applicant has withdrawn Groups 1 and 3, namely claims 1-11 and 26-32.

The Examiner has further required the applicant to elect a species within Group 2. The applicant confirms the election of species C and E (see Figures 15d or 17d), which are directed to sealing surfaces on the spool and housing which are generally frusto-conical. Accordingly, within Group 2, claims 17 and 20 are withdrawn.

In the office action, the Examiner has rejected claims 12-15, 21-25 and 33-39 under 35 U.S.C. 103(a) as being obvious in view of US 5,613,843 (Lukas) and US 6,192,937. The Examiner has argued that Lukas teaches a paintball marker having a flow control valve 30 including a housing having a first (100), a second (102), a third (98), a fourth (62) and a fifth port (68). The Examiner stated that the housing further included a first, a second, a third and a fourth housing projection extending into the interior longitudinally between the first and second

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ports. The Examiner argued that the four flat surfaces defining the areas between the ports constitute projections into the interior of the housing.

The applicant respectfully submits that the four surfaces of Lukas which the Examiner has identified as being projections, are not projections but are simply part of a cylindrical interior surface with 5 ports, which is shown in cross-section in Figures 1 and 2 of Lukas. When the valve of Lukas is actuated, the spool sealing surfaces shown at 90, 92 and 94 would have to move across the orifices leading to ports 100, 102 and 98 to effect a change in the gas flow through the valve (see Figures 1 and 2 of Lukas).

The marker claimed in claims 12 and 33 (the two independent claims that were examined), includes projections which extend into the interior of the housing. By having projections extending into the interior of the housing, the spool sealing surfaces do not have to move across the orifices leading to the valve ports. The Examiner is referred to Figure 11 of the present application to see an example of a valve having projections (elements 367a, 368a, 369a and 370a) which extend into the interior of the housing, in accordance with claims 12 and 33. Accordingly, the applicant submits that valve structure claimed in claims 12 and 33 is significantly different from the valve structure of Lukas.

The Examiner has stated that Lukas teaches the claimed valve structure but instead of using 4 sealing surfaces, Lukas uses 3 sealing surfaces. The Examiner then further states that Fagerlie teaches the use of 4 sealing surfaces and that it would be obvious to substitute the valve of Lukas with its 3 sealing surfaces with the valve of Fagerlie with its 4 sealing surfaces.

The applicant submits that the valve disclosed by Lukas is entirely different from the valve of Fagerlie in some significant ways. The valve disclosed by Lukas, as explained above, has a cylindrical interior surface with ports leading thereto and

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has no interior projections. The valve disclosed by Fagerlie has an entirely different interior configuration. Additionally, the valve taught by Fagerlie includes a solenoid. The applicant submits that nowhere is it suggested by Lukas or by Fagerlie that a person could gain advantage by taking the valve of Fagerlie, removing certain components from it (eg. the solenoid assembly), and incorporating the remaining structure into a paintball marker in place of the valve disclosed by Lukas. Accordingly, the applicant submits that there is no motivation to combine the two patents in the way that the Examiner is apparently suggesting.

Conversely, the applicant submits that the valve of Fagerlie, if incorporated directly into the marker of Lukas in place of the valve of Lukas, would result in a marker that would include a solenoid. The solenoid would be actuated ultimately by the trigger and would in turn actuate a valve element. The applicant submits that both claims 12 and 33 claim a marker with a valve wherein the valve spool is engageable by the trigger by a mechanical and/or a pneumatic connection. Accordingly, the applicant submits that even in combination, Lukas and Fagerlie do not teach the invention claimed in claims 12 and 33. One particular advantage (of many) of this configuration is that by using a valve with housing projections but without a solenoid, as claimed in claims 12 and 33, the trigger travel can be kept relatively short, a feature normally associated with solenoid operated markers. Thus, a marker can be made that has a short trigger travel, but that does not suffer from the reliability issues that can accompany a solenoid.

The applicant reiterates that the claimed configuration and the accompanying advantages are not suggested by either Lukas or Fagerlie. Furthermore, the applicant submits that the claimed configuration and the accompanying advantages are not achieved by the simple combining of the structures disclosed by the two patents.

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The applicant submits that claims 13-15, 21-25 and 34-39 are patentable over Lukas and Fagerlie at least by way of their dependency on claims 12 and 33.

In the office action, the Examiner has further cited US Patent 5,409,040 (Tomlin) in combination with Lukas and Fagerlie, against claims 16, 18 and 19. The Examiner stated that Tomlin teaches the use of frusto-conical sealing surfaces for use in pneumatic spool valves.

The applicant submits that the Examiner has not identified where Tomlin discloses such a teaching. A review of Figures 1 and 2 of Tomlin show the movement of the spool valve element, which is shown at 32. As can be seen in the figures, the spool valve element 32 seals against an annular surface of valve seat elements 34 or 36 depending on the position of the spool valve element 32 and also seals on a cylindrical surface (note o-ring 33) on the valve cage element 24a. These seals are described by Tomlin in column 3, lines 1-10. In the position shown in Figure 1, fluid passage can take place between the outlet port shown at 16 and the exhaust port shown at 18. In the position shown in Figure 2, passage of fluid can take place between the inlet shown at 14 and the outlet 16.

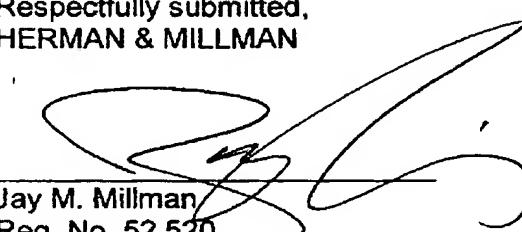
The applicant requests that the Examiner specify where he believes Tomlin teaches the use of frusto-conical sealing surfaces.

In any case, the applicant submits that even in combination, for at least the reasons described above in relation to Lukas and Fagerlie, the combined teachings of the Lukas, Fagerlie and Tomlin do not result in the invention claimed in claims 16, 18 and 19.

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In view of the foregoing, it is respectfully submitted that the application is now in condition for allowance.

Respectfully submitted,
HERMAN & MILLMAN


Jay M. Millman
Reg. No. 52,520
Tel. 416-512-8100 x222